

REMARKS

Claims 1-20 are currently pending in the patent application. The Examiner has finally rejected Claims 1-20 under 35 USC 102 as anticipated by Borowsky. By this response, Applicants request reconsideration of the rejections. In addition, Applicants present amendments to present rejected claims in better form for consideration on appeal, should such action be necessitated by the Examiner's response to this Request for Reconsideration.

The present invention is directed to an apparatus, program storage device, and a method for evaluating workload across a processing environment having a plurality of computer systems each having a plurality of assigned workload units, wherein the method comprises the steps of assigning a plurality of impact values, one impact value for each workload unit assigned for each of the plurality of computing systems, wherein the assigning of each impact value comprises determining a change in system expiration date should the workload unit be removed from the system; and assessing the workload based on the impact values.

An impact value is assigned for each workload unit, wherein a workload unit is expressly defined for the application as "a subset of the workload", the workload

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being "the set of identifiable tasks that execute in the processing system" (see: page 8, line 19-page 9, line 3). For each subset of the workload, an impact value is assigned, representing the change in system expiration date that would occur if the workload unit was removed from the system. The term "expiration date" is the date when the server workload is expected to exceed its capacity because of growth in workload. The expiration date may be calculated using life expectancy, capacity space, or other method, as detailed in the Specification on page 11, lines 1-18. Applicants respectfully point out that while the manner of calculating the expiration date for the system may be flexible, Applicants are not claiming a manner of calculating expiration date for a system. Applicants are claiming a system and method and program storage device for evaluating workload across a processing environment, and it is the assigning of an impact value as the determined change in expiration date for each workload unit that is a claim feature.

The 102 reference, the Borowsky patent, is directed to a method and apparatus for implementing Quality of Service (QoS) guarantees in designing data storage systems. Borowsky estimates workload for a data storage system in terms of time and then determines whether the estimate would

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fall within the Quality of Service guarantees desired for that data storage system. Borowsky provides $W(T)$ to represent the "work generated by the combined workload 86" (Col. 7, lines 25-26) and teaches that " $W(T)$ is a random variable with a probability distribution" (Col. 7, lines 30-31). As expressly taught by Borowsky in Col. 7, lines 40-43, "[t]he units of the workload distribution $W(T)$ is in terms of time, wherein it is determined the total length of time for the host 84 to complete the work." Once Borowsky has estimated the total time, it then compares the length of time for the p-quantile of the workload distribution to a preset value, "bound T" which is based on the QoS guarantee. If the length of time of the p-quantile of the workload distribution $W_p(T)$ is less than the bound T, then the condition is met" (Col. 7, lines 43-45). If the time estimate exceeds bound T, then the host would not meet the QoS guarantee for the workload.

Applicants respectfully assert that the Borowsky patent does not teach or suggest the invention as claimed. With specific reference to the claim language, Borowsky does not teach a step for assigning a plurality of impact values, one impact value for each workload unit assigned for each of the plurality of computing systems, wherein the assigning of each impact value comprises determining a change in system

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expiration date should that workload unit be removed from the system. Borowsky does not look at separate workload units as they relate to the total time estimate. Borowsky simply determines or estimates the total length of time for a host to complete work. Borowsky does not assign an impact value for each workload unit related to the expiration date when a server workload would be expected to exceed capacity. What Borowsky does is provide a "random variable with a probability distribution" which is loosely based on workload specifications 26. The workload specifications are defined at Col. 4, lines 21-42 as data on the past performance or estimated performance of systems under "typical loads." Borowsky does not determine an impact unit for each actual workload unit; but, rather, estimates a probability distribution for a combined workload. In fact, Borowsky expressly teaches that "[i]n most instances, the p-quantile of the workload distribution $W(T)$ cannot be computed directly" and is, instead, estimated for the workload (Col. 7, lines 57-Col. 8, lines 8). Applicants conclude, therefore, that the Borowsky patent does not anticipate the claim step of assigning a plurality of impact values, one for each workload unit.

Applicants further assert that the Borowsky patent does not teach or suggest the second step or means for assessing

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the workload based on the impact values. Borowsky does not assess workload based on its own workload distribution value, let alone on impact values related to a change in system expiration date. Borowsky simply estimates a total length of time and compares it to a threshold (bound T). If the total length of time exceeds "bound T", then a new estimate is done for a different workload. While Borowsky uses the term "reassesses", the "reassessment" of workload, it is neither based on its calculated workload distribution estimate nor on impact values. Rather, Borowsky simply selects a different workload and performs a new estimate of the total length of time for that workload. Again, the estimate is for the combined workload and not individual workload units.

It is well established under U. S. Patent Law that, for a reference to anticipate claim language under 35 USC 102, that reference must teach each and every claim feature. Since the Borowsky patent does not teach steps or means for assigning a plurality of impact values, one impact value for each workload unit assigned for each of the plurality of computing systems, wherein the assigning of each impact value comprises determining a change in system expiration date should the workload unit be removed from the system; and assessing the workload based on the impact values, it

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cannot be maintained that Borowsky anticipates the invention as set forth in the independent claims, Claims 1, 10, and 12. Applicants further point out that, a reference which does not anticipate the language of the independent claims cannot be said to anticipate the claims which depend therefrom and add further limitations thereto. Accordingly, Applicants conclude that all of the pending claims are patentable over the Borowsky patent.

In the *Response to Arguments* section of the Final Office Action, the Examiner has stated that "Borowsky teaches plural workloads". Applicants agree that Borowsky teaches that the combined workload is made up of independent workloads (see: e.g., the paragraph found in Col. 8 from lines 26-42); however, the cited teachings clearly show that Borowsky estimates the p-quantile distribution and time for the overall work and not for individual workload units. The Examiner further states that Borowsky utilizes the workload library information for typical workloads. Applicants note, as discussed above, that the Borowsky workload specifications are not impact values for individual workload units; but comprise, as defined at Col. 4, lines 21-42, data on the past or estimated performance of systems under "typical loads." Again, Borowsky is dealing with performance for overall combined workloads, and not workload

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units. Moreover, Borowsky is using data gathered or estimated from past performance of "typical" overall workloads and not for actual workloads or workload units which are to be performed. Finally, the Examiner concludes that "Borowsky teaches an 'expiration date' of a system and workload" based on the teachings found in Col. 6 from line 6-line 52. In the cited teachings, Borowsky describes the "virtual store" which maintains client-selected attributes for which level of QoS is required by the client. Clearly the client's quality of service attributes do not anticipate the system's expiration date, let alone the impact value which is the change in system expiration date for a workload unit that is a subset of the overall workload. Borowsky teaches that "one of the quality-of-service attributes associated with capacity planning for the target system 80 is in the form of 'P% of all requests must achieve a response time of less than T seconds'" (see: Col. 6, lines 40-43). Applicants respectfully argue that Borowsky's mention of "capacity planning" does not teach or suggest evaluating workload by assigning an impact value for a subset workload unit, as taught and claimed by the present application.

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Based on the foregoing amendments and remarks, Applicants respectfully request entry of the amendments, reconsideration of the amended claim language in light of the remarks, withdrawal of the rejections, and allowance of the claims.

Respectfully submitted,

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